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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/045,484

01/10/2002

Tijs Wilbrink

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9704

7590

10/15/2004

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EXAMINER

OSORIO, RICARDO

ART UNIT

PAPER NUMBER

2673

DATE MAILED: 10/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/045,484

**Applicant(s)**

WILBRINK ET AL.

**Examiner**

RICARDO L OSORIO

**Art Unit**

2673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,4-12,15 and 17-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 4-12, 15, and 17-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1, 5-7, 10, 11, 15, 17, 18, 21, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lieberman (US 2002/0075240) in view of Goldman (6,232,960).

Regarding claim 1, Lieberman teaches of a computer device (page 6, paragraph 140, lines 6-9) comprising: a projecting device (Fig. 8, reference character 68) for displaying a graphical representation of a keyboard (Fig. 8, reference character 18), said graphical representation including key locations (Fig. 8, reference character 82) capable of being selected by an object (page 7, paragraph 150, lines 16-17), said graphical image displayed in an area proximate said device (see Fig. 8, notice the graphical image is proximate to the projector); a signal detection system for detecting the presence of an object located at a selected key location within said area (page 7, paragraph 149, lines 5-13, and paragraph 150, lines 1-4); and, mechanism for determining the selected key in response to detecting an object at a corresponding selected key location (page 7, paragraph 150, lines 5-19), and registering said selected key as a keystroke in said computing device (page 6, paragraph 140).

Lieberman further teaches of devices such as visible and non-visible light, acoustic, and infrared, for detecting the location of objects within said limited range defined by the graphical

Art Unit: 2673

representation (Fig. 8, reference characters 102 and 104, and page 8, paragraph 156, and paragraph 157, lines 14-16).

However, Lieberman does not teach that said signal detection system includes a radar device for detecting the location of objects within a limited range defined by the graphical representation.

Goldman teaches of a signal detection system including a radar device for detecting the location of objects within a limited range defined by the graphical representation (col. 8, lines 61-67 and col. 9, line 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the radar device, as taught by Goldman, in the device of Lieberman because radar devices are well known in the art of electromagnetic signal detectors to be electromagnetic energy source devices that can be used as an alternative to other devices, such as laser, microwave, ultraviolet, infrared, etc, to transmit a signal that is detectable when a user's finger, or other object, reflects a transmitted signal back to the detector.

Regarding claim 5, Lieberman teaches that said signal detection system includes an electromagnetic signal transmitter means (Fig. 8, reference characters 102 and 104) for iteratively transmitting series of electromagnetic signals (page 7, paragraph 150, lines 4-10 and 16-20) sweeping, or scanning, said limited range (page 7, paragraph 149, lines 10-12 and paragraph 151, lines 10-12), and receiving electromagnetic signal reflections from detected objects (page 7, paragraph 150, lines 7-10 and 16-18), wherein said electromagnetic signal transmitter means is located a predetermined distance away from said graphical representation (

Art Unit: 2673

see in Fig. 8, light travels a predetermined distance between source of light beams 102 and 104 and keyboard image, and page 7, paragraph 149, lines 10-12).

Regarding claim 6, Lieberman teaches that said determining mechanism includes: means for calculating a distance between said electromagnetic signal transmitter means and said detected object (page 7, paragraph 152, lines 5-13); and means for determining a current iteration of said series of electromagnetic signals (page 7, paragraph 150, lines 5-10, and 16-20, paragraph 152, lines 5-8 and 14-17. Note that the light beam transmissions are always repetitively reflected and detected by light detector, regardless of if a finger has been placed on one of the input areas), wherein said key is determined according to said distance and said current iteration (paragraph 152, lines 5-17).

Regarding claim 7, Lieberman further teaches that said means for calculating a distance between said electromagnetic signal transmitter means and said detected object includes means for determining an elapsed time between transmission of said electromagnetic signal and receipt of its corresponding reflected signal (page 7, paragraph 152, lines 5-8).

Regarding claim 10, Lieberman teaches the object includes a finger of a user of said computer device (page 7, paragraph 150, line 7).

Art Unit: 2673

Regarding claim 11, Lieberman further teaches of means for customizing content of said virtual keys provided in the graphical representation of said keyboard (page 7, paragraph 148, lines 3-9).

Regarding claim 15, Lieberman teaches of a method for providing input to a computer device (page 6, paragraph 140, lines 6-9) comprising the steps of : displaying a graphical representation of a keyboard image (Fig. 8, reference character 18), said graphical representation including key locations (Fig. 8, reference character 82) capable of being selected by an object (page 7, paragraph 150, lines 16-17), said graphical image displayed in a limited area proximate said device (see Fig. 8, the graphical image is in limited area proximate to the projector); detecting the presence of an object located at a selected key location (page 7, paragraph 149, lines 5-13, and paragraph 150, lines 1-4); and, determining the selected key in response to detecting an object at a corresponding selected key location (page 7, paragraph 150, lines 5-19).

However, Lieberman does not teach that said signal detection system includes a radar transmission and detection device for detecting the location of objects within a limited range defined by the graphical representation.

Goldman teaches of a signal detection system including a radar transmission and detection device for detecting the location of objects within a limited range defined by the graphical representation (col. 8, lines 61-67 and col. 9, line 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the radar device, as taught by Goldman, in the device of Lieberman because

Art Unit: 2673

radar devices are well known in the art of electromagnetic signal detectors to be electromagnetic energy source devices that can be used as an alternative to other devices, such as laser, microwave, ultraviolet, infrared, etc, to transmit a signal that is detectable when a user's finger, or other object, reflects a transmitted signal back to the detector.

Regarding claim 17, Lieberman teaches that said selected key determining step comprises the steps of :

calculating a distance between said electromagnetic signal transmitter and said detected object (page 7, paragraph 152, lines 5-13); and, determining a current iteration of said series of electromagnetic signals (page 7, paragraph 150, lines 5-10, and 16-20, paragraph 152, lines 5-8 and 14-17. Note that the light beam transmissions are always repetitively reflected and detected by light detector, regardless of if fingers have been placed on one of the input areas), wherein said key is determined according to said distance and said current iteration (paragraph 152, lines 5-17).

Regarding claim 18, Lieberman further teaches that said calculating step includes the step of determining an elapsed time between transmission of said electromagnetic signal and receipt of its corresponding reflected signal (page 7, paragraph 152, lines 5-8).

Regarding claim 21, Lieberman teaches, after the determination step, the step of registering said selected key as a keystroke in said computing device (page 6, paragraph 140).

3. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raffi et al (6,614,422) in view of Goldman (6,232,960).

Regarding claim 12, Raffi teaches of a computer device (Figs. 1A and 1B, reference character 80) comprising: a projecting device (Figs. 1A and 1B, reference character 145) for displaying at least portion of a screen image display (Fig. 1B, reference character 105, col. 8, lines 7-9, and col. 10, lines 37-44), said screen image display including displayed items (Figs. 1A and 1B, reference character 30) capable of being selected by an object (col. 9, lines 41-47); a signal detection system (Figs. 1A and 1B, reference character 20), for detecting the presence of an object located at a selected key location (col. 7, lines 37-42); and, mechanism for determining the selected item in response to detecting an object at a corresponding selected key (col. 9, lines 26-29, and col. 20, lines 21-34).

However, further, Raffi does not teach that said signal detection system includes a radar device for detecting the location of objects within a limited range defined by the graphical representation.

Goldman teaches of a signal detection system including a radar device for detecting the location of objects within a limited range defined by the graphical representation (col. 8, lines 61-67 and col. 9, line 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the radar device, as taught by Goldman, in the device of Raffi because radar devices are well known in the art of electromagnetic signal detectors to be electromagnetic energy source devices that can be used as an alternative to other devices, such as laser,

microwave, ultraviolet, infrared, etc, to transmit a signal that is detectable when a user's finger, or other object, reflects a transmitted signal back to the detector.

4. Claims 4, 8 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liberman in view of Goldman as applied to claims 1, 5-7, 10, 11, 15, 17, 18, and 21 above, and further in view of Hillman et al (US 2002/0061217).

Regarding claim 4, Lieberman, as anticipated by Goldman, does not teach of said signal detection system including a laser generator and photodetector device for detecting the location of objects within said limited range.

Hillman teaches of a signal detection system including laser generator and photodetector device for detecting the location of objects within a limited range (page 3, paragraph 40, lines 6-16 and paragraph 56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the laser generator and detector, as taught by Hillman, in the device of Lieberman and Goldman because laser devices are well known in the art of detectors to be electromagnetic energy source devices that can be used as an alternative to other detectors such as light emitting diodes, microwave, ultraviolet, etc, to transmit a signal that is detectable when a user's finger, or other object, reflects a transmitted signal back to the detector. (see Hillman, page 3, paragraph 40, lines 8-13).

Regarding claim 8, further, Lieberman, as anticipated by Goldman, fails to teach of memory means comprising a mapping of valid selectable key strokes according to calculated distances and electromagnetic pulse iterations.

Art Unit: 2673

Hillman teaches of memory means (page 5, paragraph 55, lines 8-9) comprising a mapping of valid selectable keystrokes (page 5, paragraph 55, lines 5-15) according to calculated distances (page 4, paragraph 46, and page 5, paragraph 55, lines 8-11) and electromagnetic pulse iterations (page 5, paragraph 65, and paragraph 66, lines 1-4. Note that signals are transmitted repetitively, and that an object is detected during a specific signal transmission or scan).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to map the valid selectable keystrokes as taught by Hillman, in the device of Lieberman and Goldman so that by comparing the position of the detected object with a stored table of positions, the appropriate keystroke can be determined (page 5, paragraph 55, lines 11-15).

Regarding claim 19, further, Lieberman, as anticipated by Goldman, fails to teach the step of providing mapping of valid selectable keystrokes according to calculated distances and electromagnetic pulse iterations.

Hillman teaches of providing a mapping of valid selectable keystrokes (page 5, paragraph 55, lines 5-15) according to calculated distances (page 4, paragraph 46, and page 5, paragraph 55, lines 8-11) and electromagnetic pulse iterations (page 5, paragraph 65, and paragraph 66, lines 1-4. Note that signals are transmitted repetitively, and that an object is detected during a specific signal transmission or scan).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to map the valid selectable keystrokes as taught by Hillman, in the device of Lieberman and Goldman so that by comparing the position of the detected object with a stored

Art Unit: 2673

table of positions, the appropriate keystroke can be determined (page 5, paragraph 55, lines 11-15).

5. Claims 9 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liberman in view of Goldman as applied to claims 1, 5-7, 10, 11, 15, 17, 18, and 21 above, and further in view of Torunoglu et al (US 2003/0132921).

Regarding claim 9, Lieberman, as anticipated by Goldman, further, fails to teach of leg means for adjusting a vertical and angular orientation of said projecting and signal detection devices with respect to a surface, said adjusting mechanism for adjusting a range of said series of electromagnetic signals according to a projected display.

Torunoglu teaches of leg means for adjusting a vertical and angular orientation of said projecting and signal detection devices with respect to a surface (page 4, paragraph 48, lines 14-16 and paragraph 58, lines 4-10, page 6, paragraph 78, lines 4-10, paragraph 85, lines 2-10, and paragraph 87, lines 11-14), said adjusting mechanism for adjusting a range of said series of electromagnetic signals according to a projected display (page 6, paragraph 85, lines 2-10 and paragraph 87, lines 11-18).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the leg means, as taught by Torunoglu, in the combined device of Lieberman and Goldman because different users may wish to adjust the height and angle of their device to adjust to their various needs and to allow the device to be tilted at a desired angle (see Torunoglu, page 4, paragraph 58, lines 4-5, and page 6, paragraph 78, lines 9-11); and to allow the user to make necessary adjustments to account for different operating environments and work surfaces (see page 7, paragraph 78, lines 1-2).

Regarding claim 20, Lieberman, as anticipated by Goldman, further, fails to teach of, prior to iteratively transmitting a series of electromagnetic signals for sweeping said limited area, the step of positioning the transmitter device to thereby restrict electromagnetic signal sweep range.

Torunoglu teaches of the step of adjusting, or positioning, the transmitter device to thereby restrict electromagnetic signal sweep range (page 6, paragraph 85, lines 2-10 and paragraph 87, lines 11-16. Note that by adjusting the height and angle of the light source with respect to a surface, prior to operation, naturally, the electromagnetic signal sweep range will be restricted).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the positioning means, as taught by Torunoglu, in the device of combined Lieberman and Goldman to allow the user to make necessary adjustments to account for different operating environments and work surfaces (see paragraph 78, lines 1-2).

6. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liberman in view of Goldman as applied to claims 1, 5-7, 10, 11, 15, 17, 18, and 21 above, and further in view of Sandbach et al (US 2003/0011576).

Regarding claim 22, Lieberman, as anticipated by Goldman, fails to teach of, after the determination step, the step of notifying a user of a key being selected in said projected display, said notifying step including changing the color or dimension of the selected virtual key.

Sandbach teaches that, after determining the selected key in response to detecting an object at a corresponding selected key location, of the step of notifying a user of a key being selected in said

projected display, said notifying step including changing the color of the selected virtual key (page 1, paragraph 3, lines 1-10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to change the color of the key, as taught by Sandbach, in the device of Lieberman to indicate that its selection has been recognized by the computer (see Sandbach, page 1, paragraph 3, lines 9-10).

7. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liberman in view of Goldman as applied to claims 1, 5-7, 10, 11, 15, 17, 18, and 21 above, and further in view of Raffi et al (6,614,422).

Liberman, as anticipated by Goldman, further, does not precisely teach of differentiating a detected object by relative speed of movement.

Raffi teaches of differentiating a detected object by relative speed of movement (see col. 6, lines 12-32).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to differentiate by detect the speed of movement, as taught by Raffi, in the combined device of Liberman and Goldman to further reduce the measurement error (see col. 6, lines 13-19).

### ***Response to Arguments***

8. Applicant's arguments filed 7-15-2004 have been fully considered but they are not persuasive.

First, Goldman teaches of a signal detection system including a radar device for detecting the location of objects within a limited range defined by the graphical representation (col. 8, lines 61-67 and col. 9, line 1).

Then, Raffi teaches of a computer device (Figs. 1A and 1B, reference character 80) comprising: a projecting device (Figs. 1A and 1B, reference character 145) for displaying at least portion of a screen image display (Fig. 1B, reference character 105, col. 8, lines 7-9, and col. 10, lines 37-44), said screen image display including displayed items (Figs. 1A and 1B, reference character 30) capable of being selected by an object (col. 9, lines 41-47).

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ricardo L. Osorio whose telephone number is 703 305-2248. The examiner can normally be reached on Monday through Thursday from 7:00 A.M. to 5:30

Art Unit: 2673

P.M. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala whose telephone number is 703 305-4938.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:


703 872-9306 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ricardo L. Osorio  
Examiner  
Art Unit: 2673

RLO  
October 12, 2004

  
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